

WHAT IS CLAIMED IS:

1. A pyrochemical reprocessing method for spent nuclear fuel for melting the spent nuclear fuel in a molten salt placed in a crucible and by depositing the 5 nuclear fuel, whereby:

the crucible is heated by induction heating, a cooling medium is supplied to cool down, and a molten salt layer is maintained by keeping balance between the heating and the cooling, and a solidified salt layer is 10 formed on wall surface in the crucible.

2. A pyrochemical reprocessing method according to claim 1, wherein a fluid except water is used as the cooling medium.

3. A pyrochemical reprocessing method according claim 1 or 2, wherein auxiliary heating members are arranged in the crucible to promote temperature increase of the salt.

4. An induction heating system to be used in a pyrochemical reprocessing method for melting a spent 20 nuclear fuel in a molten salt placed in a crucible and for depositing the nuclear fuel, wherein said induction heating system comprises means for induction heating, and cooling means for cooling by supplying a cooling medium to the crucible.

25 5. An induction heating system according to claim 4, wherein said crucible is designed in cylindrical shape, annular shape, planar shape or in a shape formed by combining these shapes.

6. An induction heating system according to claim 4 or 5, wherein auxiliary heating members are arranged in the crucible for promoting the increase of salt temperature.

5        7. An induction heating system according to claim 4, wherein a fluid except water is used as the cooling medium.